CLAIMS

1. A metal chelate-forming fiber characterized in that at least one metal chelate-forming compound selected from the group consisting of aminodicarboxylic acids, thiocarboxylic acid and phosphoric acid which are reactive to epoxy group is bonded to a fiber molecule of a natural fiber or regenerated fiber through a crosslinkable compound which has a reactive double bond and a glycidyl group in its molecule.

2. The metal chelate-forming fiber according to claim 1, wherein said crosslinkable compound is at least one selected from the group consisting of glycidyl methacrylate, glycidyl acrylate and allyl glycidyl ether.

3. The metal chelate-forming fiber according to claim 1 or 2, wherein said metal chelate forming compound is at least one selected from the group consisting of iminodiacetic acid, ethylenediaminediacetic acid, ethylenediaminetriacetic acid, thioglycolic acid, thiomalic acid and phosphoric acid.

4. The metal chelate-forming fiber according to claim 3, wherein said metal chelate forming compound is iminodiacetic acid, ethylenediaminetriacetic acid or thioglycolic acid.

5. The metal chelate-forming fiber according to any one

of claims 1 to 4, wherein said natural or regenerated fiber is a vegetable fiber.

6. The metal chelate-forming fiber according to claim 5, wherein said vegetable fiber is a cellulosic type fiber.

7. The metal chelate-forming fiber according to any one of claims 1 to 4, wherein said natural fiber is an animal fiber.

8. The metal chelate-forming fiber according to any one of claims 1 to 7, wherein said fiber is powdery.

9. The metal chelate-forming fiber according to any one of claims 1 to 7, wherein said fiber is a filter material.

10. A process for producing a metal chelate-forming fiber, comprising

subjecting a crosslinkable compound having a reactive double bond and a glycidyl group in its molecule to graft reaction with a fiber molecule of a natural or regenerated fiber using a redox catalyst; and

allowing the resulting graft reaction product to be bonded with at least one metal chelate-forming compound selected from the group consisting of aminodicarboxylic acids, thiocarboxylic acids and phosphoric acid which are reactive with an epoxy group.

11. The process according to claim 10, wherein said crosslinkable compound is at least one selected from the group consisting of glycidyl methacrylate, glycidyl acrylate and allyl glycidyl ether.

12. The process according to claim 10 or 11, wherein said metal chelate forming compound is at least one selected from the group consisting of iminodiacetic acid, ethylenediaminediacetic acid, ethylenediaminetriacetic acid, thioglycolic acid, thiomalic acid and phosphoric acid.

13. The process according to any one of claims 10 to 12, wherein said redox catalyst is a combination of a divalent iron salt, hydrogen peroxide and thiourea dioxide.

14. The process according to claim 13, wherein the natural or regenerated fiber is previously treated with the divalent iron salt and is then applied with the hydrogen peroxide and thiourea dioxide to thereby perform the graft reaction.

15. A method of capturing metal ions, comprising bringing the metal chelate-forming fiber according to any one of claims 1 to 9 into contact with an aqueous liquid containing metal ions to thereby capture the metal ions from the aqueous liquid.

16. A method of capturing metal ions, comprising bringing the metal chelate-forming fiber according to any one of claims 1 to 9 into contact with an oily liquid containing metal ions to thereby capture the metal ions from the oily liquid.

17. A method of capturing metal ions, comprising bringing the metal chelate-forming fiber according to any one of claims 1 to 9 into contact with a gas containing metal ions to thereby capture the metal ions from the gas.

18. A metal chelate fiber characterized in that a metal is bonded by chelation to the metal chelate-forming fiber according to any one of claims 1 to 9.